

CLAIMS

1. A method for controlling the movement of a specific sample component in a fluid sample comprising:

- (a) providing a constrained fluid pathway having an inlet;
- 5 (b) introducing the fluid sample into the inlet of the constrained fluid pathway;
- (c) providing an electrode mounted at the inlet of the fluid pathway, the electrode being entirely external to the constrained fluid pathway;
- 10 (d) applying voltage to the electrode to create a voltage gradient within the constrained fluid pathway to promote electrophoretic migration of the sample component; and
- (e) adjusting the flow rate of the fluid approximately equal to and opposite to the electrophoretic migration;

15 wherein movement of the specific sample component ceases.

2. The method of claim 1 wherein the constrained fluid pathway is a channel.

3. The method of claim 1 wherein the constrained fluid pathway is a capillary tube.

4. The method of claim 1 wherein the constrained fluid pathway is less than 200 microns in diameter.

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5. The method of claim 1 wherein the flow rate of the fluid sample is controlled by electroosmosis.

6. The method of claim 1 wherein the flow rate of the fluid sample is controlled by pressure.

7. The method of claim 1 wherein the constrained fluid pathway is a channel on a microchip.

8. An electrophoretic apparatus for controlling the movement of an sample component in a fluid sample comprising:

- 5 (a) at least one constrained fluid pathway having an inlet and an electrode mounted at the inlet of the constrained fluid pathway and entirely external to the constrained fluid pathway; and
- (b) a power supply for supplying a voltage to the electrode.

10 9. The apparatus of claim 8 wherein the constrained fluid pathway is a channel located on a microchip.

10. The apparatus of claim 8 wherein the constrained fluid pathway is a capillary.

11. The apparatus of claim 8 further comprising a buffer reservoir for containing a buffer solution in fluid contact with the constrained fluid pathway.

15 12. The apparatus of claim 8 wherein the constrained fluid pathway is a channel in a microchip.

13. The apparatus of claim 8 wherein the constrained fluid pathway is a capillary.

14. The apparatus of claim 8 wherein the diameter of the constrained fluid pathway is less than 200 microns in diameter.

20 15. An electrophoretic apparatus for controlling the movement of an sample component in a fluid sample comprising:

- (a) at least one injection fluid pathway having an electrode mounted at the inlet of said the pathway;

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- (b) at least one separation or further fluid transfer fluid pathway having an electrode mounted at the inlet of said pathway;
- (c) at least one power supply for providing voltage to the electrodes; and

5 (d) means for regulating the bulk flow within the channels.

16. The method of claim 15 wherein the constrained fluid pathway is a channel in a microchip.

17. The method of claim 15 wherein the constrained fluid pathway is a capillary.